DOCUMENT RESUME

ED 372 082 TM 021 723

AUTHOR Wilkinson, L. David; And Others
TITLE Riding Them off into the Sunset: A Cost-Effectiveness Review of a District's Special Programs. Publication No. 93.10.
INSTITUTION Austin Independent School District, Tex. Office of Research and Evaluation.
PUB DATE Apr 94
NOTE 47p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 4-8, 1994).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Budgeting; Comparative Analysis; *Cost Effectiveness; Dropout Research; *Dropouts; *Evaluation Methods; Norm Referenced Tests; *Program Evaluation; Research Methodology; School Districts; Test Results; Volunteers
IDENTIFIERS *Austin Independent School District TX; Iowa Tests of Basic Skills; Norm Referenced Assessment Program for Texas

ABSTRACT

In the 1992-93 school year, in response to a request from the Board of Trustees of the Austin Independent School District (Texas) (AISD), the district's Office of Research and Evaluation conducted a retrospective examination of the 1991-92 AISD programs to determine cost-effectiveness when possible. This report describes the review process. Cost-effectiveness was calculated by dividing a measure of cost in dollars by one of two measures of effect: achievement or not dropping out. Cost was defined as the program's appropriation (budget). Achievement was based on scores on the Norm-Referenced Assessment Program for Texas or the Iowa Tests of Basic Skills. Dropout information came from the district's system or comparisons of predicted and actual dropouts. The office reviewed 85 programs or program components, with cost-effectiveness calculated for 18 by achievement, 16 by dropout measures, and the balance rated on other measures of effectiveness. Most programs were rated as effective. Many programs with high initial costs were relatively low in cost per student once established. The cost-effectiveness of volunteer services was also demonstrated. Twenty-seven tables present study data. (Contains 12 references.) (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 372 082

RIDING THEM OFF INTO THE SUNSET: A COST-EFFECTIVENESS REVIEW OF A DISTRICT'S SPECIAL PROGRAMS

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
G. LIGON
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

L. David Wilkinson

Evangelina Mangino, Ph.D.

Austin Independent School District
Austin, Texas

Glynn Ligon, Ph.D.

Evaluation Software Publishing, Inc.

Paper Presented at the Annual Meeting of the
American Educational Research Association,
New Orleans, April 1994

Disclaimer

The opinions and conclusions expressed herein are those of the authors and do not necessarily reflect the position or policy of the Austin Independent School District or the Office of Research and Evaluation. No official endorsement should be inferred.

Publication No. 93.10

TM021723

BEST COPY AVAILABLE

TABLE OF CONTENTS

Abstract ii

Introduction 1

Method 2

- Overview 2
- Data Sources 3
- Analyses 4
- Results 5
- Summary 5
- Discussion of Findings 6
- Cost-Effectiveness of 1991-92 Programs Based on an Achievement Measure 7
- Cost-Effectiveness of 1991-92 Programs Based on a Dropout Prevention Measure 12
- Effectiveness of 1991-92 Programs Based on Other Indicators 17

Conclusions 26

Implications 26

Refinements to the Methodology in 1993-94 27

- Cost-Effectiveness of 1992-93 Programs Based on a Drug Prevention Measure 27
- Cost-Effectiveness of 1992-93 Programs Based on a Dropout Prevention Measure 30

Method 32

Definitions 35

Notes 39

References 43

ABSTRACT

Over a number of years, the Office of Research and Evaluation (ORE) has provided the Board of Trustees of the Austin Independent School District (AISD) with comparisons of the effectiveness of many of the District's special programs. In the 1992-93 school year, at the Board's request to provide it with a measure of effect as well as cost in the program effectiveness charts ORE prepares for the Board's annual budget study session, ORE conducted a retrospective examination of 1991-92 AISD programs. In February 1993, ORE presented the Board with program effectiveness charts which included cost-effectiveness ratios for many programs evaluated during 1991-92. Comments and suggestions from the Board of Trustees, District staff, and community members were used to finetune the methodology and the format in which the information was reported. A final report was issued in May 1993.

Cost-effectiveness was calculated by dividing a measure of cost in dollars by one of two measures of effect: (1) achievement, or (2) not dropping out. The cost of a program was defined as the program's appropriation (i.e., budget). The achievement measure of effect was based on standardized test scores from either the Norm-referenced Assessment Program for Texas (NAPT) or the Iowa Tests of Basic Skills (ITBS). The dropout prevention measure of effect was derived from the comparison in ORE's generic evaluation system (GENESYS) of the number of students in a program predicted to drop out with the actual number who did drop out. The difference between the predicted and actual number of dropouts, the number of students kept in school, is the dropout prevention effect measure. The cost-effectiveness ratio, expressed in dollars, which results from dividing cost by effect (C/E) is a measure of the cost-effectiveness of a program, i.e., the amount of effect for monies expended.

Where cost or effect measures were not obtainable, and other evaluation information about a program was available, ORE staff assigned ratings of effectiveness to the programs evaluated based on other indicators, such as survey results, retention rate, and attendance rate.

The major findings of the study were:

1. ORE reviewed 85 1991-92 programs or program components. Cost-effectiveness was calculated for 18 programs using an achievement effect measure and for 16 programs using a dropout prevention effect measure. An additional 14 dropout prevention programs were rated on effectiveness, although cost information could not be obtained. Another 37 programs were rated on effectiveness based on other evaluation information.

2. Most programs evaluated in 1991-92 in AISD were rated as effective. Approximately 21% of the ratings were based on achievement, 35% were based on the number of students not dropping out, and 44% were based on other evaluation findings.

3. In general, the programs showing the highest achievement gains for students tend to be programs that offer students enriching experiences in addition to the regular curriculum. Most of these programs have a relatively high initial cost, but once the program is in place the cost for the per-pupil gain is relatively low.

4. A common feature among successful dropout prevention programs is that they provide students with individual attention or the possibility of flexibility in class schedules and enrichment activities. Many of these programs are dependent on the use of volunteers or mentors, so they would not be as cost-effective if the District were to purchase the same services.

RIDING THEM OFF INTO THE SUNSET:
A COST-EFFECTIVENESS REVIEW OF A DISTRICT'S SPECIAL PROGRAMS

INTRODUCTION

What works in public education, and can we afford it? These questions are being asked more frequently in Austin and around the country as accountability is emphasized during a time of tightening budgets. In August 1992, the Board of Trustees of the Austin, Texas public schools (AISD) challenged the Office of Research and Evaluation (ORE) to provide it with measures of both effect and cost for each of the special programs evaluated by ORE. Implicit in the Board's request, although ORE was not charged with developing a process, was the concept of sunset review, through which ineffective or overly costly programs could be identified and funding withdrawn.

This request jibed with the thinking and efforts of the evaluation staff, who had over a number of years incorporated cost information into evaluation reports to accompany the effectiveness information already being reported. To move beyond current reporting toward true cost-effectiveness analysis and to lay the groundwork for a sunset review process for all programs was, however, an enormous challenge--both methodologically and, regrettably, politically.

MANDATE:
Board requested ORE to indicate effect and cost in program effectiveness charts

ORE's RESPONSE:

Retrospective look at 1991-92 evaluations including cost effectiveness

ORE's 1992-93 Agenda includes an evaluation plan to compare programs in terms of cost effectiveness

In principle, calculating cost-effectiveness looked to be a straightforward procedure. ORE was already accustomed to reporting cost information, as well as considerable effectiveness information, but the difficulty lay in combining the measures. Although ample literature about cost analysis existed for other disciplines, very few texts were devoted to applications in an education setting, and these contained only general guidelines and very simple examples. Nor was a model found among school districts contacted around the country. ORE staff were obliged to rely on their own acumen and experience in developing a methodology which used educational effect measures and which accommodated the diverse array of programs in AISD.

In addition to the methodological challenge, ORE staff were mindful of the political context. Reporting the cost-effectiveness of a variety of special programs, many of which had special interest groups ready to defend them against any negative evaluation, was a bold venture into previously avoided territory. Controversy over the methodology used and the ratings assigned to programs was expected. At the same time, overreliance by decison makers on the results of a new methodology, especially in making decisions about the future of programs, was a legitimate concern.

METHOD

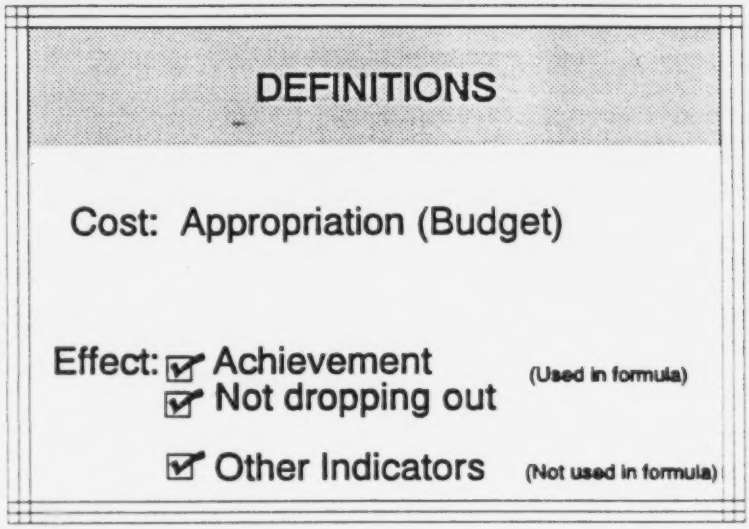
Overview

The following is a general overview of the method. A more detailed explanation is contained in the "Method" section of this paper.

Following Henry Levin's definition of cost-effectiveness (Levin, 1983) cost-effectiveness is obtained by dividing cost by effect.

$$\text{Cost Effectiveness} = \frac{\text{cost}}{\text{effect}}$$

The equation is very simple, but assigning values to the terms in the numerator and denominator is complex and can be controversial.

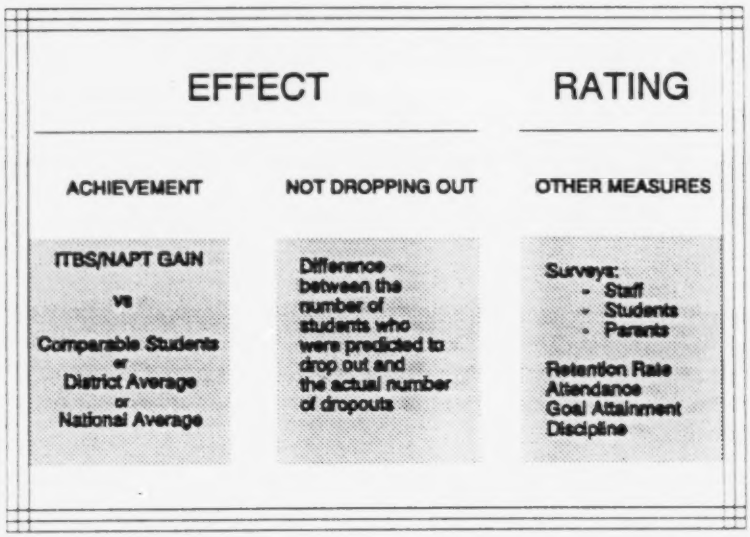


Cost

Program costs are reported as budgeted amounts. Actual expenditures may vary. Some programs with relatively low costs may require substantial indirect resources for staff support, facilities, etc. Volunteers hold the costs down in some programs, but expansion of those programs could cost more if the pool of available volunteers is not large enough to accommodate expansion.

Outcomes or Effect

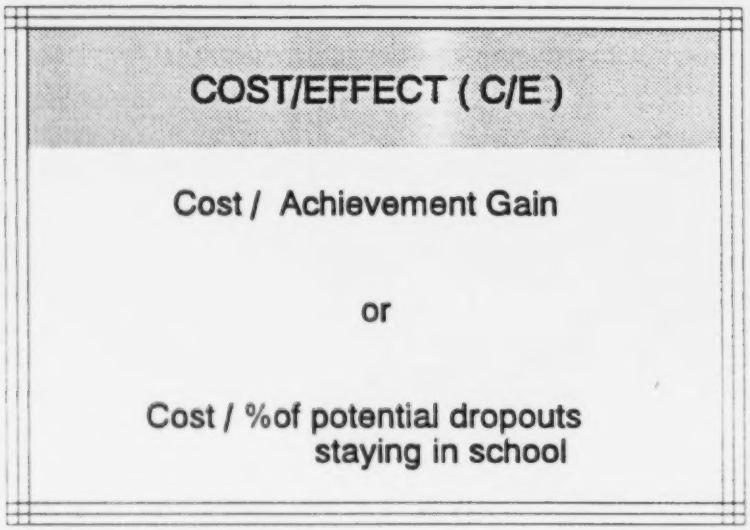
Program outcomes or effect are reported in terms of achievement gains, not dropping out, or other indicators. If available, norm-referenced test (NRT) scores were used. If the program focused on dropout prevention, then the dropout rate was used. This procedure seems straightforward, but an NRT is only one of many measures of student academic progress. Criterion-referenced tests, college entrance exams (SAT and ACT), grade-point average (GPA), and many other alternatives could be used. An NRT was chosen because it is our most reliable, broadest based, and most readily available measure. *In order to compare cost-effectiveness across programs, a single effect measure is essential.*



BEST COPY AVAILABLE

When an NRT score was used, outcomes are reported as the achievement gain in grade equivalent (GE) months--above and beyond what the students would have gained without the program. A grade equivalent month is the amount of gain made on the Norm-referenced Assessment Program for Texas (NAPT) or the Iowa Tests of Basic Skills (ITBS) by an average student during one month of instruction.

For programs for at-risk students, the dropout rate is clearly appropriate. Although these programs can certainly have benefits beyond just keeping students in school, the purpose of the calculation was to look simply at how much the program spent to keep one student from dropping out. In other words, if the student population served typically has 20 dropouts annually, and among the program students only 15 dropped out, then the program is credited with keeping five in school. This can make the cost per student kept in school high, because 20 at-risk students may have to be served to net one dropout kept in school.



Programs for which no norm-referenced test or dropout data were available were rated based upon other information from their evaluation reports.

Cost-effectiveness

Outcomes are divided into the cost of the program per student to give the cost to produce one month of achievement gain, or into the total program cost to calculate the cost to keep one potential dropout in school. A caution to the reader is that a program may not be able to produce twice the effect for twice the cost. We do not know what relationships would exist if we spent more or less money on a program. However, this cost-effectiveness number does tell us what we did spend for the amount of benefit realized.

Cost-effectiveness could not be shown for some programs, either because they had no positive effect or because their impact was actually negative.

Data Sources

The data reported in this paper derive from cost-effectiveness analyses performed by ORE during the 1992-93 school year on 1991-92 AISD programs. Cost information was obtained from District files of financial information. Effectiveness information was developed from many sources but of chief interest here are achievement and dropout data, which were obtained from disk files maintained by ORE on the District's IBM 4381 mainframe.

Analyses

The method used to calculate cost-effectiveness is detailed in the "Method" section of this paper. A few remarks here about the major components of the analyses performed will be helpful, however.

Type of Analysis

Although it should be evident from the terminology, it was sometimes necessary to distinguish for ORE staff and others that the type of cost analysis we were pursuing was cost-effectiveness analysis, where the denominator in the equation is a measure of effectiveness expressed in nonmonetary terms, rather than cost-benefit analysis, where the denominator is benefit expressed in dollars. Cost-effectiveness is often used as a general term to connote any type of cost analysis, even by some educational researchers, but different cost analyses, while they have cost as a common term in the numerator, have different terms in the denominator. If cost-benefit ratios were desired, it would be necessary to assign monetary benefits to program outcomes; then costs expressed in dollars would be divided by benefits expressed in dollars.

Cost

In previous years, ORE had grappled with the issue of how to "cost" programs (see Wilkinson, 1985) and had arrived at several operational decisions. One of these was that a program's initial budget, or appropriation, should be used as the program's cost, rather than actual expenditures. The rationale for this decision was that while a program may not have expended its entire appropriation, the entire amount appropriated was reserved to it and was therefore not available to some other program. Imbedded in the appropriation, therefore, was a kind of "opportunity cost"; the amount of unexpended funds could have been spent by some other program if it had had the opportunity.

Another important operational decision had to do with inequity of "charging" to a program the entire amount of its start-up costs in its first year of operation, especially when a large quantity of equipment was purchased, as in a technology program. If the program operated over a period of years, its average annual cost would be much less than its actual first-year cost. Although it could be argued that the difference between a program's first-year cost and subsequent years' costs was a reflection of reality, and that there was no guarantee that the program would continue to operate for the numbers of years projected, it seemed nonetheless an artificial distortion of the cost to run the program to include the start-up costs in one year's budget. Alternatives included prorating the start-up costs over the projected years of operation or depreciating capital outlays in second and successive years. For the purposes of these analyses, the decision was made to distinguish between "investment cost" and annual "operating cost," to report both, but to base cost calculations only on operating cost.

While there may be more precise ways to determine cost--and generally accepted accounting practices for educational programs will probably be adopted in the future--ORE's emphasis in this study was on the effect side of the equation, and therefore the determination of costs was generally along the lines of previous work.

Report On School Effectiveness (ROSE)

In determining which effect measures to use, considerable attention was paid to the importance of distinguishing the effect of a special program from that of the general educational program. In other words, the question to be answered was, "What happened as a result of this program which would not have occurred without the program?" For example, it is not enough simply to measure the achievement gain made by a group of students in a special program; it is necessary to try to assess achievement gain *above and beyond* what the students would normally have gained without the program. The underlying concept is a comparison of actual outcome with some anticipated outcome given that the program has an effect. Whether that anticipated outcome is termed *predicted*, *average*, *norm*, *target*, or whatever, the difference between the actual and the standard against which it is compared is logically attributable to the effect of the program.

To establish a standard against which to compare achievement outcomes, ORE made use of an analysis it had developed to measure the effectiveness of schools and later extended to programs. Both the Report On School Effectiveness (ROSE) and the Report On Program Effectiveness (ROPE) utilize regression analysis to predict student achievement, whether by all the students in a school or by students in a special program, and then to compare predicted achievement with actual achievement. The difference between predicted and actual achievement, expressed in grade equivalents (GE's), is the ROSE/ROPE residual. The ROSE residual was used as the achievement effect measure (denominator) for many of the cost-effectiveness analyses. See "Method" for more information about ROSE and about alternative achievement effect measures.

Dropout Prediction

Like the achievement effect measure, the dropout prevention effect measure was expressed as a residual, between the number of students in a program predicted to drop out and the actual number who dropped out. The "Method" and "Definitions" sections of this paper contain a detailed explanation. A great deal of discussion, continuing through the present, has been devoted to the method used to establish the predicted number of dropouts. The method is predicated on the longitudinal tracking of AISD dropouts and their associated risk factors. However, only academic risk factors are used to calculate the predicted number of dropouts. Other risk factors which are better predictors of dropping out need to be incorporated into the analyses. This issue will be discussed further in "Refinements to the Methodology in 1993-94."

GENeric Evaluation SYStem (GENESYS)

Another important component in the cost-effectiveness analyses was ORE's GENeric Evaluation SYStem (GENESYS). Developed to provide a wide range of evaluation information about a program, GENESYS relies on a large number of District-maintained computer files. GENESYS produces, among other things, ROSE and ROPE analyses. Most of the GE's used in calculations of achievement effect were obtained from GENESYS. GENESYS also produces statistics on the predicted and actual number of dropouts. For more information about GENESYS, see "Method." See also Ligon and Baenen (1989) and Wilkinson and Spano (1990).

RESULTS

Summary

The major findings of the study were:

1. ORE reviewed 85 1991-92 programs or program components. Cost-effectiveness was calculated for 18 programs using an achievement effect measure and for 16 programs using a dropout prevention effect measure. An additional 14 dropout prevention programs were rated on effectiveness, although cost information could not be obtained. Another 37 programs were rated on effectiveness based on other evaluation information.

2. Most programs evaluated in 1991-92 in AISD were rated as effective. Approximately 21% of the ratings were based on achievement, 35% were based on the number of students not dropping out, and 44% were based on other evaluation findings.

3. In general, the programs showing the highest achievement gains for students tend to be programs that offer students enriching experiences in addition to the regular curriculum. Most of these programs have a relatively high initial cost, but once the program is in place the cost for the per-pupil gain is relatively low.

4. A common feature among successful dropout prevention programs is that they provide students with individual attention or the possibility of flexibility in class schedules and enrichment activities. Many of these programs are dependent on the use of volunteers or mentors, so they would not be as cost-effective if the District were to purchase the same services.

Discussion of Findings

Most programs evaluated in 1991-92 in AISD were rated as effective. Approximately 21% of the ratings are based on achievement, 35% are based on the number of students not dropping out, and 44% are based on other evaluation findings.

Achievement Gains

In general, the programs showing the highest achievement gains for students served tend to be programs that offer students enriching experiences in addition to the regular curriculum. Most of these programs have a relatively high initial cost. But once the program is in place, the gain for the per-pupil cost is relatively low.

WHAT WORKS

Successful Program	Effect (Gain)	C/E Index ($)
★ Computer Lab at Read	9.5	6
★ Science Academy	6.4	210
★ Liberal Arts Academy	3.4	443
★ Ch. 1 Supplementary	3.3	530
★ Secondary Honors	2.3	0
★ Gifted & Talented (Elem.)	1.7	51
★ Kealing	1.3	410

Dropout Prevention

A common feature among successful dropout prevention programs is that they provide students with individual attention or the possibility of flexibility in class schedules and enrichment activities. Many of these programs are dependent on the use of volunteers or mentors. The cost reported for these programs does not reflect the in-kind contribution of volunteers.

WHAT WORKS

Successful Dropout Prevention Programs

	Served	% Who Stayed
★ Johnston Tech. Lab	678	29
★ Block Prog. at Travis	175	10
★ Title VII Newcomers	104	7
★ PEAK	163	7
★ Block Prog. at Lanier	144	5
★ Adopt a student	31	3

The following sections contain charts showing the (1) cost-effectiveness of 1991-92 programs based on an achievement measure, (2) cost-effectiveness of 1991-92 programs based on a dropout prevention measure, and (3) effectiveness of 1991-92 programs based on other indicators. Each section is prefaced by an example showing how cost-effectiveness was calculated for the programs in the section.

COST-EFFECTIVENESS OF 1991-92 PROGRAMS BASED ON AN ACHIEVEMENT MEASURE

Example

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Elementary Computer Lab Funding Source: Local Grades: 5 Level of Service: 45-85 hours/week	+	$15,925	264	$60	R: 11.0 M: 8.0 Avg.: 9.5	$6

Elementary Computer Lab, 1991-92 - Grades: 5 - *Level of Service*: 45-85 minutes/week

Rating: +

Cost: $15,925

Number of Students Served: 264

Cost Per Student: $60 [$15,925/264 = $60]

Effect: R: 11.0 M: 8.0 Avg. = 9.5

Cost/Effect: $6 [$60/9.5 = $6.32]

What this means is that it costs $6 per year per Elementary Computer Lab student attending the computer lab to attain one month's achievement gain above that the student would normally have achieved as the result of the regular instructional program.

Cost-Effectiveness of 1991-92 Programs Based on an Achievement Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Bilingual/ESL Funding Source: Local Grades: K-12 Level of Service: Varies	0	$831,524	6,108	$136	R: 0.0 M: 0.2 Avg.: 0.1	
Chapter 1 School Projects (all students) Funding Source: External Grades: K-6 Level of Service: All day/all year	0	$1,787,173	6,328	$282	R: -0.8 M: N/A Avg.: N/A	
Chapter 1 Schoolwide Projects (low achievers) Funding Source: External Grades: K-6 Level of Service: All day/all year	+	$245,683	428	$574	R: 1.5 M: N/A Avg.: N/A	$383
Chapter 1 Supplementary Instruction (low achievers) Funding Source: External Grades: 1-6 Level of Service: 30 min. per day/all year	+	$785,538	1,482	$530	R: 3.3 M: N/A Avg.: N/A	$160

* Participants

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

R:= Reading
M:= Mathematics
Avg.:= Average
(sometimes average is weighted by number of students)

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

Cost-Effectiveness of 1991-92 Programs Based on an Achievement Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Chapter 2 Elementary Computer Lab at Read Funding Source: External Grades: 5-6 Level of Service: 45-85 min./week/all year	+	$15,925 Investment Cost (est.) $15,000 for software and 8 Apple computers bought in 1989-90	264	$60	R: 11.0 M: 8.0 Avg.: 9.5	$6
DFS Student Alcohol and Drug Education Prevention Program Funding Source: External Grades: 5-12 Level of Service: N/A	+	$149,009	1,711	$87	R: -0.04 M: -0.14 Avg.: -0.09 Positive student survey results, lower retention, & lower dropout rate	
Elementary Computer Lab at Blanton Funding Source: External Grades: 2-5 Level of Service: 20-30 min./day/all year	0	$56,522 Investment Cost (est.) $100,000	402	$141	R: 0.7 M: -0.6 Avg.: 0.05	
Gifted & Talented (Elementary) Funding Source: Local Grades: K-6 Level of Service: Varies	+	$342,156	3,922	$87	R: 2.0 M: 1.4 Avg.: 1.7	$51
Gifted & Talented (Secondary) Funding Source: Local Grades: 6-11 Level of Service: 1 or more honors courses	+	$0	8,321	$0	R: 2.7 M: 2.0 Avg.: 2.3	
Kealing Magnet Funding Source: Local Grades: 7-8 Level of Service: All year	+	$221,491 Investment Cost (est.) $10,000	432	$513	R: 2.0 M: 0.5 Avg.: 1.25	$410

Cost-Effectiveness of 1991-92 Programs Based on an Achievement Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Liberal Arts Academy Funding Source: Local Grades: 9-12 Level of Service: All day	+	$450,296 --- Investment Cost (est.) $173,533	276	$1,632	R: 5.4 M: 1.3 Avg.: 3.4	$480
MegaSkills Parent Training Funding Source: External Grades: 2-6 Level of Service: 5-8 workshops	+	$75,630 ($40,650 provided by DFS Grant, $21,980 Chapter 1, $13,000 area businesses)	1,196	$63	R: 0.06 M: 0.10 Avg.: 0.08 Highest attendance, lower discipline, & lower retention rate	
Priority Schools Overall (Low achievers) Funding Source: External & Local Grades: Pre-K through 6 Level of Service: All day/all year	+	$5,227,579	7,557	$692	R: 3.4 M: N/A Avg.: N/A	$204
Project A+ Elementary Technology Demonstration Schools: Andrews Funding Source: External Grades: K-5 Level of Service: All day/all year	0	$63,253 --- $1,100,956 Investment cost for hardware, software, and wiring	843	$75	R: 0.0 M: -0.25 Avg.: -0.13	
Project A+ Elementary Technology Demonstration Schools: Patton Funding Source: External Grades: K-5 Level of Service: All day/all year	0	$63,253 --- $1,354,320 Investment cost for hardware, software, and wiring	1,037	$61	R: -0.5 M: 0.0 Avg.: -0.25	

* Participants

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

R: = Reading
M: = Mathematics
Avg.: = Average (sometimes average is weighted by number of students)

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Cost-Effectiveness of 1991-92 Programs Based on an Achievement Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Project A+ Elementary Technology Demonstration Schools: Langford Funding Source: External Grades: K-5 Level of Service: All day/all year	0	$53,744 / $749,642 Investment cost for hardware, software, and wiring	574	$94	R: 2.0 M: -0.25 Avg.:0.875	
Project A+ Elementary Technology Demonstration Schools: Galindo Funding Source: External Grades: K-5 Level of Service: All day/all year	0	$44,235 / $246,000 Investment cost for hardware, software, and wiring	751	$59	R: 0.0 M: 1.25 Avg.:0.625	
Science Academy Funding Source: Local Grades: 9-12 Level of Service: All year	+	$815,604 / $513,711 Investment cost, local and grant sources	608	$1,341	R: 8.3 M: 4.5 Avg.: 6.4	$210

COST-EFFECTIVENESS OF 1991-92 PROGRAMS BASED ON A DROPOUT PREVENTION MEASURE

Example

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS SERVED	COST PER STUDENT	NUMBER OF DROPOUTS		PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT)		COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)
					Predicted	Obtained	#	%	
Dropout Prevention Program Funding Source: External Grades: 9-12	+	$100,000	140	$714	12	3	9	75	$11,111

Dropout Prevention Program, 1991-92 - Grades: 9-11 - *Level of Service*: 3 hours/day

Rating: +

Cost: $100,000

Number of Students Served: 140

Cost Per Student: $714 [$100,000/140 = $714.28 = $714 rounded]

Effect: 9

[Predicted 9.1%, Obtained 2.9%

2.9/9.1 = .31868 = 32% of predicted rate, or 68% "saved" from dropping out

.091 x 140 students = 12.74 = 12 rounded = 12 students predicted to drop out

.68 x 12 students = 8.84 = 9 rounded = 9 students "saved"]

Cost/Effect: $11,111 [$100,000/9 = $11,111.11 = $11,111 rounded]

What this means is that it costs $11,111 for each student "saved" from dropping out by the Dropout Prevention Program who would otherwise have been expected to drop out of school.

Cost-Effectiveness of 1991-92 Programs Based on a Dropout Prevention Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	NUMBER OF DROPOUTS		PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT)		COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)
					Predicted	Obtained	#	%	
Adopt A Student at LBJ Funding Source: Local Grades: 9-12	+	$0	31	$0	3	0	3	100	$0
Alternative Learning Center (ALC) Funding Source: Local and External Grades: 9-12	+	$429,760	104	$4,132	104**	30	74	71	$5,804
Alternative Learning Center (ALC) Funding Source: Local and External Grades: 7-8	+	$628,111	152	$4,132	152**	31	121	80	$5,191
Block Program-Crockett (Success) Funding Source: Local Grades: 9-12	+		79		2	1	1	50	
Block Program-Lanier (Connections) Funding Source: Local Grades: 9-12	+		114		5	0	5	100	
Block Program-Reagan Funding Source: Local Grades: 9-12	+		45		2	1	1	50	
Block Program-Travis (Excel) Funding Source: Local Grades: 9-12	+		175	0	14	4	10	71	

* Participants

** All students in program are at risk by definition.

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Cost-Effectiveness of 1991-92 Programs Based on a Dropout Prevention Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	NUMBER OF DROPOUTS		PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT)		COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)
					Predicted	Obtained	#	%	
Communities in School (CIS) at Fulmore Funding Source: External Grades: 7-8	+		52		2	0	2	100	
CIS at Pearce Funding Source: External Grades: 7-8	0		18		1	1	0	0	
CIS at Porter Funding Source: External Grades: 7-8	+		41		1	0	1	100	
CIS at Robbins Funding Source: External Grades: 9-12	+		79	0	79**	15	64	81	
CIS at Travis Funding Source: External Grades: 9-12	+		40	0	3	1	2	33	
CVAE Funding Source: Local Grades: 9-12	-		361	0	39	47	-8	-21	
Evening School Funding Source: Local and External Grades: 9-12	+	$329,346	300	$1,098	300**	60	240	80	$1,372
Hispanic Student Scholarship Initiative (HSSI) at Martin Funding Source: External Grades: 7-8	0	$0	31	$0	0	0			
Johnston Technology Learning Ctr. Funding Source: External Grades: 9-12	+	$56,838	678	$84	34	5	29	85	$1,672

Cost-Effectiveness of 1991-92 Programs Based on a Dropout Prevention Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	NUMBER OF DROPOUTS Predicted	NUMBER OF DROPOUTS Obtained	PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT) #	PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT) %	COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)
Jumpstart (McCallum) Funding Source: Local Grades: 9-12	0	$0	11	0	0	0			
Mentor Funding Source: External Grades: 9-12	+		41		2	0	2	100	
Mentor Funding Source: External Grades: 7-8	+		92		1	0	1	100	
Newcomers Program (Title VII) Funding Source: External Grades: 9-12	+	$140,000	104	$1,346	104**	3	101	97	$1,386
Peer Assistance Leadership (PAL) Funding Source: External Grades: 9-12	+	$13,162	48	$274	3	0	3	100	$4,387
Peer Assistance Leadership (PAL) Funding Source: External Grades: 7-8	+	$46,888	171	$274	1	0	1	100	$46,888

* Participants

** All students in program are at risk by definition.

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

Cost-Effectiveness of 1991-92 Programs Based on a Dropout Prevention Measure

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	NUMBER OF DROPOUTS		PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT)		COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)
					Predicted	Obtained	#	%	
Practical Effective Application of Knowledge (PEAK) Program (Austin, McCallum) Funding Source: Local Grades: 9-12	+	$0	34	$0	2	0	2	100	$0
Practical Effective Application of Knowledge (PEAK) Program - Spring 1992 Funding Source: Local Grades: 9-12	+	$0	129	$0	5	0	5	100	$0
Project MAN (Men Act Now) at LBJ Funding Source: External Grades: 9-12	+	$0	28	0	1	0	1	100	$0
Reading Tutor at Austin Fall 1991 Funding Source: Local Grades: 9-12	0		25		1	1	0	0	
Reading Tutor at Austin Spring 1992 Funding Source: Local Grades: 9-12	+		21		1	0	1	100	
Robbins Funding Source: Local and External Grades: 9-12	+	$1,333,238	536	$2,487	536*	94	442	82	$3,016
Texas Associates of Minority Engineers (TAME) Club at Bowie Funding Source: Local Grades: 9-12	0	$210	53	$4	1	1	0	0	
Zenith at Evening School Funding Source: Local Grades: 9-12	+	$131,990	323	$409	323*	16	307	95	$430

EFFECTIVENESS OF 1991-92 PROGRAMS BASED ON OTHER INDICATORS

EXAMPLE

PROGRAM	ALLOCATION (COST)	NUMBER OF STUDENTS SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/ EFFECT)	RATING
Supplementary Instructional Program Funding Source: External Grades: K-6 Level of Service: 1-2 hours per week	$144,200	128	$1,127	Rating based on program meeting its goals		+

Supplementary Instructional Program, 1991-92 - Grades: K-6 - Level of Service: 1-2 hours/week

Rating: +

Cost: $144,200

Number of Students Served: 128

Cost Per Student: $1,127 [$144,200/128 = $1,126.56 = $1,127 rounded]

Effect: No NAPT/ITBS or dropout data available

[Because no appropriate achievement test data or dropout prevention data were available, the rating of this program is based on other indicators, in this case, a measure of the extent to which the program is meeting its goals.]

Cost/Effect: Cannot be calculated

[In the absence of an effect measure comparable to that used with other programs by which to divided the cost (i.e.,
the denominator), a cost-effectiveness ratio cannot be calculated.]

What this means is that it costs $1,127 per year per Supplementary Instructional Program student to attain progress toward the program's goals, but the cost-effectiveness of the program relative to other programs in terms of its effect
on student achievement or dropout prevention cannot be determined.

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Chapter 1 Migrant Supplementary Instruction Funding Source: External Grades: K-12 Level of Service: One to two hours per week/full year	+	$144,002	128	$1,125	Rating based on program meeting its goals	
Chapter 1 Neglected or Delinquent Institutions Funding Source: External Grades: 1-12 Level of Service: Varied	+	$75,498	1,054	$72	Rating based on institutions meeting their goals for the year	
Chapter 1 Nonpublic Schools Funding Source: External Grades: 1-7 Level of Service: 30 min./day/all year	+	$16,377	22	$744	Rating based on program meeting its goals	
Chapter 2 Academic Decathlon Funding Source: External Grades: 11-12 Level of Service: Varied by school	+	$38,609	76	$508	Rating based on employee survey results	

* Participants

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

R:= Reading
M:= Mathematics
Avg.:= Average (sometimes average is weighted by number of students)

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Chapter 2 Elementary Computer Lab at Blackshear Funding Source: External Grades: K-1 and ED students in grades 1-3 Level of Service: 45-60 minutes/day/all year	+	$17,191 Investment Cost (est.) $16,000 for hardware and software plus $1,000 annually for consumable materials	123	$8	Rating based on employee survey results	
Chapter 2 Extracurricular Transportation Funding Source: External & Local Grades: 6-12 Level of Service: As requested	+	$194,713 (Chapter 2 $96,418; Local $98,295)	540	$182	Rating based on Student and Employee survey results	
Chapter 2 Library Resources Funding Source: External Grades: Pre-K through 12 Level of Service: N/A	+	$40,310	66,705	$1	Rating based on employee survey results	
Chapter 2 Middle School Homeroom Training Funding Source: External Grades: 6-8 Level of Service: None		$3,379	0		No training held	
Chapter 2 Multicultural/Special Purpose Buses Funding Source: External Grades: Pre-K through 12 Level of Service: As requested/all year	+	$12,000	9,450	$1	Rating based on employee and bus user survey results	
Chapter 2 Private Schools Funding Source: External Grades: Pre-K through 12 Level of Service: N/A	+	$21,419	2,766	$8	Rating based on private school survey results	

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Chapter 2 Secondary Library Technology Support Funding Source: External Grades: 6-12 Level of Service: N/A	+	$19,833	12,032	$2	Rating based on purchases made	
Chapter 2 Spanish Academy Funding Source: External Grades: Any AISD staff member is eligible to participate Level of Service: N/A	+	$38,774	213 Staff	$182	Rating based on participant survey	
Chapter 2 Support for Restructured Robbins Funding Source: External Grades: 9-12 Level of Service: N/A	+	$7,000	361	$19	Rating based on principal interview	
Chapter 2 Technology for Access to Problem Solving Funding Source: External Grades: 8 Level of Service: Calculators & training one time	+	$0 (Calculators provided by TEA)	4,324	$0	Rating based on employee survey results	

* Participants

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

R: = Reading
M: = Mathematics
Avg.: = Average
(sometimes average is weighted by number of students)

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Chapter 2 Technology Learning Center at Johnston High Funding Source: External Grades: 9-12 Level of Service: As requested by classroom teachers for enrichment activities	0	$56,838 Investment Cost (est.) $110,000 for 25 station integrated Learning System (ILS)	1,552	$37	Rating based on employee survey results	
DFS All Well Health Services Funding Source: External Grades: K-12 Level of Service: Teachers Conference	+	$3,000	10 teachers	$300	Rating based on staff survey results	
DFS Conflict Resolution Project Funding Source: External Grades: 9-12 & staff Level of Service: 3 meetings/month/all year	+	$55,147	86	$641	Rating based on survey results	
DFS Drug Abuse Resistance Education Funding Source: External Grades: 5 & 7 Level of Service: 5 hrs./week for 17 & 10 weeks respectively	+	$686,110 ($594,302 provided by APD; $45,808 DFS grant, $30,000 fundraising, $16,000 private contribution)	10,023	$4	Rating based on survey results	
DFS Elementary Curriculum Funding Source: External Grades: PK-8 Level of Service: N/A		$40,886	38,346	$1	Insufficient Information	
DFS Office of Student Intervention Services Funding Source: External Grades: K-12 Level of Service: 1 play at each of 27 campuses	+	$22,326	5,560	$4	Rating based on survey results	Not available

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
DFS Parent Involvement Funding Source: External Grades: Adult Level of Service: 5 workshops		$5,050	202 Parents	$25	No assessment conducted	
DFS Private Schools Funding Source: External Grades: PK-12 Level of Service: Varied by school	+	$10,713	1,717	$6	Rating based on staff survey results	
DFS Read Pilot Funding Source: External Grades: 5-6 Level of Service: 1 5-day workshop		$1,357	264	$5	Insufficient Information	
DFS Peer Assistance Leadership Funding Source: External Grades: K-12 Level of Service: 30-35 minutes/week/all year	+	$60,050	1,509	$40	Rating based on survey results	

* Participants

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

R:= Reading
M:= Mathematics
Avg.:= Average
(sometimes average is weighted by number of students)

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Full-Day Prekindergarten Funding Source: External Grades: Pre-K Level of Service: Full-day classes all year	+	$1,291,422	1,787	$723	Rating based on previous years' test results	
National Science Foundation Curriculum Development Funding Source: External Grades: K-12 Level of Service: Varies	+	$12,000	20 Teachers	$600/ teacher	Rating based on teacher survey	
National Science Foundation Private Sector Involvement Funding Source: External Grades: 9-12 Level of Service:	+			Insufficient Information	Rating based on Director survey	
National Science Foundation Staff Development Funding Source: External Grades: 9-12 Level of Service:	+	$20,000	80 Teachers	$250/ teacher	Rating based on teacher survey	
Pregnancy, Education, and Parenting Funding Source: External Grades: 8-12 Level of Service: Varies		$120,000	79	$1,519	Too few students per grade for analysis	
Project A+ School Based Improvement - Phase 2 (Includes Phase I Schools) Funding Source: Local Grades: K-12 Level of Service: All year	+	$108,398	24,489	$4	Rating based on programs initial implementation goals being met	

Effectiveness of 1991-92 Programs Based on Other Indicators

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Special Education Funding Source: Local/External Grades: K-12 Level of Service: All year		$36,003,493	9,129	$3,944		
Title II Elementary Mathematics Funding Source: External Grades: K-5 Level of Service: Varies	+	$34,937	61	$573	Rating based on participant survey	
Title II Elementary Science Funding Source: External Grades: K-5 Level of Service: Varies	+	$34,557	122	$283	Rating based on participant survey	
Title II Gifted/Talented Funding Source: External Grades: K-5 Level of Service: Varies	+	$15,887	308	$52	Rating based on participant survey	
Title II Secondary Mathematics Funding Source: External Grades: 6-12 Level of Service: Varies	+	$41,082	116	$354	Rating based on participant survey	

* Participants

Rating is expressed as contributing to any of the 5 AISD strategic objectives.

+	*Positive*, needs to be kept and expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

R: = Reading
M: = Mathematics
Avg.: = Average
(sometimes average is weighted by number of students)

Cost is the expense over the regular District per student expenditure of about $2,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Effectiveness of 1991-92 Programs Based on Other Indicators

	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS* SERVED	COST PER STUDENT	EFFECT (in months)	COST PER STUDENT FOR 1 MONTH GAIN (COST/EFFECT)
Title II Secondary Science Funding Source: External Grades: 6-12 Level of Service: Varies	+	$34,251	59	$581	Rating based on participant survey	
Title VII Secondary Bilingual Funding Source: External Grades: 9-11 Level of Service: All year	+	$140,000	104	$1,346	Rating based on other school success indicators	

CONCLUSIONS

A year-long endeavor to combine measures of program effectiveness with fiscal resources expended led to the following conclusions:

1. Information about the costs of special programs in our District, and probably in most others, is not easily obtainable at present. Costing a program is not a simple matter, but it is made more complicated in the absence of record keeping devoted to documenting program costs.

2. Unless there are meaningful consequences, such as a public report, the priority placed by program staff on documenting program participation and cost information will be relatively low.

3. For the purpose of calculating cost-effectiveness, standardized achievement test scores remain the best--i.e., the most reliable, broadest based, and most readily available--effect measure. Other proposed achievement measures, such as grades and to-be-developed performance assessment measures, do not serve the present purpose as well. Refinement of the dropout prevention measure used is needed.

4. The methodology used in this study for calculating cost-effectiveness has great promise but also recognizable limitations. Further study and refinement of the methodology are needed to establish more confidence that it appropriately reflects how much learning is achieved for each dollar spent on special programs.

IMPLICATIONS

The combination of cost with effectiveness information enables the evaluation of programs in terms of their relative costs in meeting the same outcome criteria: improving student achievement or preventing students from dropping out of school. In other words, alternative programs can be evaluated on the basis of their costs for raising student test scores by a given amount or the cost for each potential dropout averted. Other success indicators notwithstanding, information about which programs provide the maximum effectiveness per level of cost or require the least cost per level of effectiveness will assist in decisions about which programs to keep and expand, which to modify, and which to discontinue.

School board members and the general public increasingly request information about the cost and effectiveness of special programs about which budgetary decisions must be made. Actual cost-effectiveness information provides a dimension to the decision-making process which is often lacking. It is incumbent on evaluators, however, to assist decision makers such as school boards to understand the nature and limitations of the cost-effectiveness information being made available so that the information does not become the justification for the arbitrary sunsetting of programs because of budget reduction pressures rather than the programs' merit. Evaluators must resist being inveigled to draw conclusions which go further than their findings can sustain. At the same time, they must also resist criticism of their findings which arises more from political, self-serving motives than from a genuine concern with the quality of the data or the precision of the methodology.

In sum, while decision makers and the general public favor eliminating ineffective and costly programs, assembling--then defending--the information needed for "riding them off into the sunset" is a challenge both methodologically and politically. Evaluators who undertake to respond to requests for cost-effectiveness information should take care to prepare on both fronts.

REFINEMENTS TO THE METHODOLOGY IN 1993-94

Since the 1992-93 school year, when ORE first calculated cost-effectiveness, a few refinements have been made to the methodology. Chief among these has been to extend the calculations to include programs intended to prevent student alcohol and other drug abuse.

Cost-Effectiveness of 1992-93 Programs Based on a Drug Prevention Measure

As with the other types of programs for which cost-effectiveness was calculated, the cost-effectiveness of drug prevention programs is calculated by dividing cost by a drug use prevention measure of effect. Cost was again appropriation. Effect was defined as not using drugs.

Definition: Cost = appropriation (budget)

Effect = **not using drugs**

The **drug prevention measure of effect** was operationalized as the difference between the recent use of an illicit substance by program participants and by students in the District overall.

Definition: *Not using drugs* = The difference between the recent use of an illicit substance by program participants and by students in the District overall

The measure of students prevented from using drugs was based on self-reported use of alcohol, tobacco, and other illicit substances on the Student Alchol and Other Drug Use Survey, administered to AISD students in grades 4-12 in April 1993. The survey included items about the students' recent use of illicit substances. For students in grades 4-5, recent use is defined as use within the past school year; recent use by students in grades 6-12 is defined as use within the past 30 days. Students were also asked about their participation in Drug-Free Schools programs. The rate of recent use of any illicit substance was calculated for program participants and for the District as a whole. The number of students prevented from alcohol and other drug use reflects the difference between recent use by program participants and overall recent use by the entire sample, multiplied by the total number of students served by the program.

Cost-effectiveness was operationalized as cost of the program divided by drug prevention effect (average rate of drug use in the District minus the rate of use for program students times the number of students served by the program).

Definitions: *Cost/Effect* = Cost for the program/drug prevention effect

The **cost-effectiveness ratio**, expressed in dollars, which results from this division is a measure of the cost-effectiveness of a program, i.e., the amount of effect for monies expended, and because a common effect measure was used as the denominator among like programs, programs' cost-effectiveness can be compared.

Definition: Cost/Effect = Cost-effectiveness ratio (in dollars)

The following section contains a chart showing the cost-effectiveness of 1992-93 programs based on a drug prevention measure. The section is prefaced by an example showing how cost-effectiveness was calculated.

COST-EFFECTIVENESS OF 1992-93 PROGRAMS BASED ON A DRUG PREVENTION MEASURE

EXAMPLE

DRUG-FREE SCHOOLS (DFS) PROGRAM	COST	NUMBER OF STUDENTS* SERVED	COST PER STUDENT*	NUMBER OF STUDENTS PREVENTED FROM ALCOHOL AND OTHER DRUG (AOD) USE (EFFECT)	COST PER STUDENT PREVENTED FROM AOD USE (COST/EFFECT)	RATING
Drug Abuse Resistance Education (DARE)	$43,298	11,190	$3.87	1,119	$39	+

* Participants

Cost: $43,298

Number of Students Served: 11,190

Cost Per Student: $3.87 ($43,298/11,190 = $3.87)

Number of Students Prevented from Alcohol and Other Drug (AOD) Use (Effect): 1,119
Students prevented from AOD use by the District Drug Free School (DFS) programs is calculated by subtracting the rate of use for the DFS program students (the recent use rate for DARE participants was 30%), from the average rate of use for all students in the District (40%). That difference (10%) was multiplied by the total number of students served by the program (11,190 * .10 = 1,119)

Number of Students Prevented from Alcohol and other Drug (AOD) Use (Effect): 1,119

Cost Per Student Prevented from AOD Use (Cost/Effect): $39 ($43,298/1,119 = $38.69 = $39 rounded)

Rating: +

Rating is expressed as contributing to any of the five AISD strategic objectives.

+	*Positive*, needs to be maintained or expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*

Cost is the expense over the regular District per student expenditure of about $4,000.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student

BEST COPY AVAILABLE

Cost-Effectiveness of 1992-93 Programs Based on a Drug Prevention Measure

DRUG-FREE SCHOOLS (DFS) PROGRAM	COST	NUMBER OF STUDENTS* SERVED	COST PER STUDENT*	NUMBER OF STUDENTS PREVENTED FROM ALCOHOL AND OTHER DRUG (AOD) USE (EFFECT)	COST PER STUDENT PREVENTED FROM AOD USE (COST/EFFECT)	RATING
All Well Health Services	$3,000	10 staff	$300 staff	Insufficient information		
Conflict Resolution Project	$33,352	39 students 57 staff	$368 per participant	0		-
Drug Abuse Resistance Education (DARE)	$43,298	11,190	$3.87	1,119	$39	+
Innovative Programs	$37,014	932	$39.71	37	$1,000	+
K-12 Curriculum	$47,186	64,171	$ .74	Rating based on program records of service		+
Medicine Education and Safety Program	$5,772			Rating based on completion of project and on reactions to conference presentations		+
MegaSkills	$21,798 DFS $17,664 Ch.2; $20,705 Ch.1	1,643 parents 643 students	$13.27 per parent DFS $93.57 per student DFS $36.62 (Total for all programs)	109	$200	+
Peer Assistance and Leadership (PAL)	$56,715	1,044	$52.81	42	$942	+
Plays for Living	$6,000	4,472	$1.34	447	$13	+
Private Schools	$18,143	2,779	$6.53	Evaluation did not take place for this component.		
Quality Schools	$160,452	306 staff 602 students	$524.35 per staff trained $266.53 per student	42	$3,820	+
Student Alcohol and Drug Abuse Education and Prevention Program (SADAEPP)	$94,433 DFS $20,579 Ch.2	2,488	$37.96	75	$1,259	+
Student Assistance Program (SAP)	$24,851	185 staff	$134.33	Staff training was not evaluated this year.		

* Participants

Cost-Effectiveness of 1992-93 Programs Based on a Dropout Prevention Measure

Another refinement in the methodology stems from the continuing review of the reporting of cost-effectiveness for dropout prevention programs. Since 1992-93, questions have persisted about the relationship among the number of students served, the number of at-risk students, the number of predicted dropouts, and the cost-effectiveness of dropout prevention programs. In the analyses on 1991-92 dropout prevention programs, an exception to the method for calculating cost-effectiveness was made for those dropout prevention programs for which it could be argued that all the students were potential dropouts, regardless of their at-risk status based on academic risk factors. For these programs, the predicted dropout rate was set to 100%, rather than the percentage derived from the formula, and the obtained number of dropouts was computed on the total number of students served instead of the number of students whom the formula predicted would drop out.

Similar modifications were made in 1993-94 for 1992-93 dropout prevention programs. To clarify the relationship among the number of students served, the number of at-risk students, and the number of predicted dropouts, the number of students who were at risk among the number of students served was added to the reporting. Likewise, allocation was prorated according to the numbers of at-risk students served and the total number of students served. Finally, cost-effectiveness was computed by dividing the cost of serving the at-risk students by the number of students prevented from dropping out.

Definitions: *Cost/Effect* = Cost of the program for at-risk students/dropout prevention effect

An example of the computation for a program using a dropout prevention effect measure, and reflecting the revised reporting format, follows on the next page.

COST-EFFECTIVENESS OF 1992-93 PROGRAMS BASED ON A DROPOUT PREVENTION MEASURE

EXAMPLE

PROGRAM	ALLOCATION (COST)	NUMBER OF STUDENTS SERVED	COST PER STUDENT	NUMBER OF DROPOUTS		PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT)		COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)	RATING
				Predicted	Obtained	#	%		
Newcomers Program Funding Source: External Grades: 9-12	$126,000	At risk: 134 Total: 134	$940	134	6	128	96	$984	+

Newcomers Program, 1992-93 - *Grades*: 9-12 - *Level of Service*: 3 hours/day

Cost: $126,000

Number of Students Served: 134

Cost Per Student: $940 [$126,000/134 = $940.30 = $940 rounded]

Effect: 128

[Predicted 134 students, Obtained 6 students]

134 - 6 = 128 students prevented from dropping out

Cost/Effect: $984 [$126,000/128 = $984.38 = $984 rounded]

Rating: +

What this means is that it costs $984 for each student prevented from dropping out by the Newcomers Program who would otherwise have been expected to drop out of school.

METHOD

ORE has conducted and reported cost analyses for a number of years, and this report builds on previous work (see "References"). Cost-effectiveness analysis was, however, a new venture, and ORE staff engaged in considerable discussion, over a period of months, about how cost-effectiveness should be calculated and how cost-effectiveness information should be integrated into ORE's annual report to AISD's Board of Trustees about program effectiveness. A first-person account of how staff thinking evolved and what decisions were made is detailed in "Notes on Cost Effectiveness," ORE Publication Letter 92.D. The following is a brief exposition of the method used in performing cost-effectiveness analyses on 1991-92 AISD programs. See "Definitions" and "Notes" for additional information.

Following Levin (1983), cost-effectiveness is defined as cost divided by effect:

Cost/Effect (C/E)

Cost was defined, per earlier ORE research (see Wilkinson, 1985), as a program's *appropriation* (i.e., budget). Cost was taken to include all funding for a program, *regardless of source*. Effect was defined either as (1) *achievement* or (2) *not dropping out*.

Definitions:

Cost = appropriation (budget)

Effect = **achievement**, OR

not dropping out

The **achievement measure of effect** was operationalized as the *residual* (i.e., difference) between the achievement of the program students and some standard or expectation for their achievement. A standard against which to compare is necessary to distinguish between the effect of the special program and the effect of the students' regular instructional program. Residual was defined as the difference between predicted and obtained scores, expressed in grade equivalents (GE's), from either the Norm-referenced Assessment Program for Texas (NAPT) or the Iowa Tests of Basic Skills (ITBS), both norm-referenced, standardized achievement test batteries. Three different residuals were identified: (1) *average ROSE residual*, (2) *national norm gain residual*, and (3) *AISD gain residual*.

Definitions:

Achievement = Average ROSE residual, OR
National norm gain residual, OR
AISD gain residual

Residual = The difference between predicted and obtained score; for NAPT/ITBS, expressed in grade equivalents (GE's)

Average ROSE residual = The average of the residuals from ROSE, on the reading and mathematics tests or the reading test alone, across grade levels, expressed in grade equivalents (GE's)

National norm gain residual = The difference between observed gain and an expected gain of 1.0 GE per year on the average

AISD gain residual = The difference between observed gain and the average gain in the District, in GE's

ROSE, the Report on School Effectiveness, is a series of regression analyses that answer the question, "How do the achievement gains of a school's students compare with those of other AISD students of the same previous achievement levels and background characteristics?" ROSE predicts achievement scores for the group of students who have both pre- and posttest scores on the ITBS or the NAPT, depending on grade level and year of administration. Predictions are based on:

Previous achievement level
Sex
Ethnicity
Age
Low-income status
Family income
Desegregation status of the school attended
Whether or not the student was a transfer student
Pupil-teacher ratio for school and grade

The predicted scores are then compared with the students' actual scores. The difference between the predicted and actual scores is called the ROSE residual score, which is based on a GE score scale. If students' ROSE residual scores are far enough above or below zero to achieve statistical significance, they are said to have either "exceeded predicted gain" or to be "below predicted gain." Nonsignificant residual scores are classified as "achieved predicted gain." For more information about ROSE, see Paredes (1991).

ORE's GENeric Evaluation SYStem (GENESYS) produces, among other things, a Report on Program Effectiveness (ROPE). ROSE and ROPE are very similar, the major difference between them being that ROSE evaluates schools and ROPE evaluates programs. *Most of the GE's used in calculations of achievement effect were obtained from ROPE analyses produced by GENESYS. GENESYS also produces,* for each program run, counts of *the number of students predicted to drop out and the number who dropped out* (see below). For more information about GENESYS, see Ligon and Baenen (1989) and Wilkinson and Spano (1990).

The **dropout prevention measure of effect** was operationalized as the difference between the number of students in a program predicted to drop out and the actual number of students who dropped out.

Definition: *Not dropping out* = The difference between the number of students predicted to drop out, based on their at-risk category, and the actual number of dropouts

Cost-effectiveness was operationalized as (1) cost per student divided by achievement effect, expressed in GE's or (2) cost of the program divided by dropout prevention effect (predicted minus actual dropouts).

Definitions: *Cost/Effect* = Cost per student/achievement effect, OR

Cost for the program/dropout prevention effect

The **cost-effectiveness ratio**, expressed in dollars, which results from this division is a measure of the cost-effectiveness of a program, i.e., the amount of effect for monies expended, and because a common effect measure was used as the denominator among like programs, programs' cost-effectiveness can be compared.

Definition: Cost/Effect = Cost-effectiveness ratio (in dollars)

Effect ratings were provided for programs (1) for which cost-effectiveness ratios could be calculated and (2) for which cost-effectiveness could not be calculated but about which other evaluation information was available. The ratings were based on the same scale which ORE had twice used previously.

Definitions: *Ratings*: Same scale as in February 1992 program effectiveness charts; same as in ORE's 1991-92 final reports:

Effect is expressed as contributing to any of AISD's five strategic objectives:

+	*Positive*, needs to be maintained or expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

Cost is the expense over the regular District per-student expenditure.

0	*No cost* or minimal cost
$	*Indirect costs* and overhead, but no separate budget
$$	*Some direct costs*, but under $500 per student
$$$	*Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student or more

Definitions: *Effect Rating* =

+ = Positive achievement gain, OR
Number of students who actually dropped out was less than the number who were predicted to drop out, OR
Positive opinion, based on other indicators, such as survey results, lower retention, or other success

0 = Achievement gain less than 1 month, OR
Neutral opinion

- = Negative opinion, OR
Number of students who actually dropped out exceeded the number who were predicted to drop out

blank Insufficient information

DEFINITIONS

At risk - In AISD, a student in grades 7-12 is considered at risk of dropping out if the student falls into one of 22 *risk categories*.

Cost - The total cost of the program, regardless of funding source. The cost of a program is above and beyond the cost of the regular educational program. In reporting costs, ORE standardly uses *appropriation* or *budget*, not expenditure. Some programs have capital outlay costs, e.g., for computer equipment in a lab. These costs are shown as "investment cost," i.e., the initial cost of equipment and other items to get the program going. "Operating cost" is the annual cost to keep the program functioning after large initial outlays have been made. Cost figures are rounded to the nearest dollar.

Cost/effect - "Cost per student" or "cost" (for dropout prevention programs) divided by "effect." "Cost/effect" is the *annual* cost for one month's extra achievement gain above that attributable to the regular instructional program.

Cost-effectiveness (C/E) analysis - A type of cost analysis concerned with the evaluation of alternatives according to both their costs and their effects with regard to producing some outcome or set of outcomes. In C/E analysis, a measure of cost is divided by a measure of *effectiveness*. This analysis is distinguished from other cost-effectiveness analyses by the measure used as the denominator. In cost-benefit (C/B) analysis, by comparison, the denominator is benefit expressed in dollars.

Cost per student - "Cost" divided by "number of students served." Service may have been provided to others besides students, e.g., teachers trained with Title II monies. In these instances, cost per participant should be understood. "Cost per student" is the numerator in the cost/effect calculation.

Dropout - A student is reported as a dropout for a school year if the individual is absent for a period of 30 or more consecutive school days without approved excuse or documented transfer, or fails to reenroll by September 15 of the following school year without completion of a high school program.

See "predicted dropout rate" and "obtained dropout rate."

Dropout risk probability - Based on the *risk factor* associated with the student's membership in one of 22 different *risk categories*.

See "risk category" and "risk factor."

The probability that a student will drop out is based on the actual percentage of students in that risk category who have dropped out in the past. For example, if 42.66% of the students in risk category #12 dropped out the previous year, current-year students in that risk category would be assigned a dropout risk probability of 42.66.

Effect - There are two measures of "effect." One is an achievement measure based on standardized test scores, and the second is a dropout prevention measure. **All programs ultimately need to be held to the student achievement outcome criterion**, even dropout and drug prevention programs. Like cost, the effect of a program, if any, is above that of the regular instructional program.

The ROSE residual (difference between predicted and obtained score) is the measure of achievement effect, unless the participants make up a disproportionate percentage of the comparison group. If the

program participants do make up a disproportionate part of the comparison group, another standard for comparison was selected.

Options other than ROSE residuals include:

- *Actual gain* expressed in grade equivalents,
- *National norm gain residual*, the difference between observed gain and an expected gain of 1.0 GE per year on the average, and
- *AISD gain residual*, the difference between observed gain and the average gain in the District.

For a program like DARE, for example, where all the 5th- and 7th-grade students are in the program, the only comparison available is the national norm.

"Disproportionate" is defined as the program students making up 25% or more of the AISD students at that grade or achievement level.

Achievement effect is expressed as a number greater than one (1). A GE gain of three months, for example, is expressed as 3.0, instead of 0.3.

The ROSE (residual) or dropout measure (predicted minus obtained rate) is used as the effect for those programs for which these measures can be obtained. For other programs, a +/-/0/blank rating is assigned on the same basis as in past years' ORE reports.

In the absence of a ROSE residual for the Composite test, the mathematics and reading residuals are averaged.

The dropout effect is the "number of predicted dropouts who stayed in school," i.e., the number who did not drop out who were predicted to drop out.

Funding source - Local, external, or both. External funding may be grant or other monies from other governmental entities or private organizations.

Grades - The grade levels served by the program. Analyses are based on the grade levels for which measures are available. For example, although a program may serve grades K-6, districtwide achievement test scores are not available for kindergarten.

Level of service - Generally reported in one of three categories--(1) hours per week, (2) hours per day, or (3) full year--but may be more descriptive than quantitative.

Number of students served - May be enrollment in the program or the definition used in the evaluation last year. Not all programs serve students. In these instances, "number served" refers to participants.

Obtained dropout rate - For a program or group, the actual percentage of students who dropped out.

Predicted dropout rate - For a program or group, the sum of the *dropout risk probability* for each student in the group divided by the number of students in the group (N). The number of students predicted to drop out is not equivalent to the number of at-risk students.

See "dropout risk probability," "risk category," and "risk factor."

For example, if the total of the students' risk factors for 90 students served by a dropout prevention program were 3,333.80, the predicted dropout rate would be 37.042, or 37.0% (3,333.80/90 = 37.042). The *predicted number of dropouts* for the program would be 33 students (3,333.80/100 = 33.338 = 33). In other words, of 90 students served, 33 (37.0%) would be predicted to drop out based on their dropout risk probabilities.

The number of students predicted to drop out is not equivalent to the number of at-risk students because not all students who are at risk drop out, nor are all the students who drop out identified as at risk.

Predicted number of dropouts - For a program or group, the sum of the dropout risk probability for each student in the group divided by 100.

See "predicted dropout rate."

Program - Includes any special activity customarily thought of as a program. Some programs, e.g., Chapter 2, have multiple program components. Programs often have separate budgets.

Rating - A rating is supplied both for programs for which cost-effectiveness information can be provided and for programs about which ORE staff have an informed opinion based on evaluation information. In the former case, all programs which have a positive effect--defined as 0.1 GE (1 month's gain in grade equivalents) or better--will have a + rating. (Because the cost-effectiveness ratio grows enormous the closer to zero effect size gets, **it is impractical to report sizes smaller than 0.1 GE**). In the case of programs for which ORE does not have cost-effectiveness information but does have sufficient evaluation information for an informed opinion, the rating scale used in the program effectiveness summary pages in last year's ORE final reports is applied:

Effect is expressed as contributing to any of the five AISD strategic objectives.

+	*Positive*, needs to be maintained or expanded
0	*Not significant*, needs to be improved and modified
-	*Negative*, needs major modification or replacement
Blank	*Unknown*, may have positive or negative impact on other indicators; however, impact on the five AISD strategic objectives is unknown.

Risk category - One of 22 used to identify and track at-risk secondary (grades 7-12) students. ORE extended the four state-mandated criteria to pinpoint differential dropout rates. Greater percentages of students in some risk categories drop out than in other risk categories. Additional, optional criteria for identifying at-risk students have been specified by the State, e.g., sexual, physical, or psychological abuse, living in a residential treatment facility, and being homeless. However, AISD does not maintain centralized files on students with these characteristics. Therefore, ORE does not use these criteria to identify at-risk students.

Definitions of the secondary risk categories are attached.

Risk factor - For a given *risk category*, the percentage of students in that risk category who dropped out. Expressed as a rate, the risk factor is a two decimal-place numeral. For example, if 45.75% of the students in a particular risk category dropped out, the risk factor for a student in that category would be 45.75. In other words, a student in this risk category would have almost a 50-50 chance of dropping out.

Definitions of Secondary Risk Category Codes

Risk Category	Factors	Definition
1	Age	Student is two or more years older than expected for the grade level
2	Read Ach	Student scored two or more years below grade level in reading on a norm-referenced, standardized achievement test (either the Iowa Tests of Basic Skills or the Tests of Achievement and Proficiency)
3	Math Ach	Student scored two or more years below grade level in mathematics on a norm-referenced, standardized achievement test (either the ITBS or the TAP)
4	2 F's	Student failed at least two courses during a semester
5	TEAMS Read	Student failed the reading section on the most recent administration of the State-mandated, criterion-referenced Texas Educational Assessment of Minimum Skills (TEAMS) (grades 7 & 9 only)
6	TEAMS Math	Student failed the mathematics section of the TEAMS
7	TEAMS Lang	Student failed the language arts section of the Exit-Level TEAMS (grades 11 &12 only)
8	TEAMS Write	Student failed the writing section of the TEAMS (Grades 7 & 9 only)
9	TEAMS W Comp	Student failed only the writing composition portion of the TEAMS Writing test (grades 7 & 9 only)
10	Age, Read Ach or Math Ach	Student is two or more years older than expected for the grade level and scored two or more years below grade level in reading or mathematics on the ITBS or TAP
11	Age, 2 F's	Student is two or more years older than expected for the grade level and failed at least two courses during a semester
12	Age, TEAMS (any)	Student is two or more years older than expected for the grade level and failed at least one of the sections of the TEAMS
13	Math Ach or Read Ach & 2 F's	Student scored two or more years below grade level in mathematics or reading on the ITBS or the TAP and failed at least two courses during a semester
14	Math Ach or Read Ach & TEAMS (any)	Student scored two or more years below grade level in mathematics or reading on the ITBS or the TAP and failed at least one of the sections of the TEAMS
15	2 F's, TEAMS (any)	Student failed at least two courses during a semester and failed at least one of the sections of the TEAMS
16	Age, Math Ach or Read Ach, & 2 F's	Student is two or more years older than expected for the grade level, scored two or more years below grade level in mathematics or reading on the ITBS or the TAP, and failed at least two courses during a semester
17 in	Age, Math Ach or Read Ach, & TEAMS (any)	Student is two or more years older than expected for the grade level, scored two or more years below grade level in mathematics or reading on the ITBS or the TAP, and failed at least one of the sections of the TEAMS
18	Age, 2 F's, & TEAMS (any)	Student is two or more years older than expected for the grade level, failed at least one of the sections of the TEAMS
19	Age, Math Ach or Read Ach, 2 F's, & TEAMS (any)	Student is two or more years older than expected for the grade level, scored two or more years below grade level in mathematics or reading on the ITBS or the TAP, failed at least two courses during a semester, and failed at least one of the sections of the TEAMS
20	Math Ach & Read Ach	Student scored two or more years below grade level in mathematics and in reading on the ITBS or the TAP
21	TEAMS (two)	Student failed at least two sections of the TEAMS
22	Math Ach or Read Ach, 2 F's, & TEAMS (any)	Student scored two or more years below grade level in mathematics or reading on the ITBS or the TAP, failed at least two courses during a semester, and failed at least one of the sections of the TEAMS

Note: "TEAMS" should be interpreted as "TEAMS/TAAS."

BEST COPY AVAILABLE

NOTES

Page 2

1. See Levin, H. M. (1983). *Cost-effectiveness: A primer*. Beverly Hills, CA: Sage Publications.

Page 8

1. The zero (0) rating for Bilingual/ESL programs derives from the nonsignificant achievement effect (less than an average of 1.0 grade equivalents for reading and mathematics) for *served* students (which does not include students who qualified for services but whose parents denied services). Interpretation of this effect, however, should take into account the relatively few limited-English-proficient (LEP) students for whom there were test scores. At grades pre-K through 6, approximately 16% of the LEP students served had both pre- and posttest scores. At grades 6-8, 32% of the students served had test scores, and at grades 9-12, 40% of the students served had test scores.

Page 9

1. Funding for the Elementary Computer Lab at Blanton came from Chapter 2 ($16,522) and, according to the administrative supervisor of Instructional Technology, the local budget contributed $40,000 for software.

2. Report on Program Effectiveness (ROPE) results were used as an effect measure for the Bridge computer lab at Read and for the Wicat computer lab at Blanton. Calculations were made using the procedures outlined in Notes on Cost Effectiveness #7 (see ORE Publication Letter 92.D).

3. The amount shown for estimated investment cost for the Kealing Magnet Program derives from budget summary data sheets from 1985-86 provided by Finance in March 1993. According to these sheets, the Kealing Magnet Program was allocated $10,000 in 1986-87 for purchased services, capital outlay, and supplies; Kealing Junior High School opened during the second semester of 1986-87. The sheets also indicate that the 1985-86 budget provided planning time for the principal of Kealing for the year before the school opened. Presumably, some salary costs for the principal for that year could also be included in the investment cost for the Kealing Magnet Program.

Page 10

1. The amount shown for estimated investment cost at the Liberal Arts Academy (LAA) was supplied by LAA staff in March 1993; it is the allocation for 1987-88, the year before the LAA opened, which was a planning year. That year, funds were allocated for a magnet planner, a curriculum coordinator, a secretary, teacher stipends, instructional supplies, travel, and capital outlay (see AISD budget book for 1987-88).

Pages 10-11

1. Costs for the Project A+ Elementary Technology Schools break down as follows:

Annual Operating Costs

	Patton	Andrews	Langford	Galindo
Lab techs	$28,527 (3)	$28,527 (3)	$19,018 (2)	$ 9,509 (1)
Other	$34,726	$34,726	$34,726	$34,726
Total	$63,253	$63,253	$53,744	$44,235

( ) = Number of people ($138,905/4 = $34,726.25)

Investment Cost

IBM:	$3,207,300	weighted by size of school
Patton	1,354,320	for three IBM schools
Andrews	1,100,956	
Langford	749,642	

Apple:	10,000	software
	74,000	equipment
	112,000	AISD contribution
	50,000	cabling
Galindo	$ 246,000	

Galindo's figures reflect one-time only costs using used equipment and could not be duplicated at another school.

Page 11

1. The investment cost for the Science Academy of Austin was determined as follows. Students first began attending the Science Academy in 1985-86; the previous year was developmental. According to AISD's 1985-86 budget book, the 1984-85 budget for the Science Academy was $270,900, which provided salaries, purchased services, supplies, other operating costs, and $40,000 in capital outlay. This amount was added to a $242,811 Department of Education grant in 1985-86 (figure provided by Science Academy staff) for a total of $513,711.

Page 13

1. As an alternative school, the Alternative Learning Center (ALC), the whole school, has long been thought of as a dropout prevention program. Costs for the ALC break down as follows:

Fund 112	Local	$1,054,527
Fund 322	Federal Vocational	1,400
Fund 382	Chapter 2	1,944
		$1,057,871

Both local and external funds were included. Capital improvement costs were not included.

Costs were obtained from a budget status printout (FINB21S) run 1/6/93 for the period ending 8/31/92 supplied by Internal Audit.

Because separate dropout rates are calculated for grades 7-8 and grades 9-12, and because the ALC serves students across those grade levels, costs were prorated across the two grade spans based on the numbers of students; thus, $429,760 represents 40.625% of the cost of the ALC (104 students in grades 7-8 divided by 256 students altogether), and $628,111 is the remaining 59.375% (152/256). By apportioning costs by grade span, the cost per student, $4,132, is the same for grades 7-8 as for grades 9-12.

2. As regards the ALC and predicted dropout rates, two major points must be kept in mind. First, when we predict the dropout rate of a group of students who are selected into the program specifically because they are at risk of dropping out, and when we use the difference between predicted rate and actual rate as a measure of program effect, we are confounding the imprecision of our dropout prediction with program effect. In other words, some of the differences we see may be due to imprecision in dropout prediction rather than differences among programs. This alternative explanation is true of any such analysis, but is magnified in this case. The imprecision is more of a concern here because the prediction is derived from the student population as a whole and then applied to a restricted, nonrandom sample. For this reason, where programs select at-risk students only, the predicted dropout rate is set to 100% since all students in the program should be at risk of dropping out whether our formula predicts it or not. Second, as our dropout prevention programs do a better job of keeping students in school, there may be a weakening of the relationship between the predictors we use and the probability of dropping out. We must continue to examine any dropout prediction formula to see how well it is performing. As our ability to predict decreases, more of the differences we see among programs will be due to random or unmeasured effects rather than program effectiveness. However, this likely future decrease does not negate the present usefulness of comparing actual numbers of dropouts with some predicted number in measuring program effectiveness.

3. No allocations are shown for the Block Programs because these programs involved a reorganization of local campus resources, not additional funding. Effectively, the cost for these programs was zero.

4. The positive (+) ratings for Block Programs are based on the programs having kept in school students who were predicted to drop out. Because costs could not be obtained, cost-effectiveness could not be calculated; however, effect ratings could still be made.

Page 14

1. All of the students in the Communities in Schools (CIS) program at Robbins and at the Evening School are at risk by definition. See Note 2 to page 13.

2. The Evening School as a whole is thought of as a dropout prevention program. Costs for the Evening School break down as follows:

Fund 112	Local	$328,846
Fund 322	Federal Vocational	500
		$329,346

Both local and external funds were included. Capital improvement costs were not included.

Costs were obtained from a budget status printout (FINB21S) run 1/6/93 for the period ending 8/31/92 supplied by Internal Audit.

2. The Johnston Technology Learning Center (TLC) is a Chapter 2-funded program. See page 22 for other information about the program.

Page 15

1. See page 25 for more information about the Title VII secondary bilingual program called the Newcomers Program.

Page 16

1. As an alternative school, Robbins Secondary School, the whole school, has long been thought of as a dropout prevention program. Costs for Robbins break down as follows:

Fund 112	Local	$1,130,696
Fund 322	Federal Vocational	76,420
Fund 382	Chapter 2	8,944
Fund 472	Teen Parent	117,178
		$1,333,238

Both local and external funds were included. Capital improvement costs were not included.

Costs were obtained from a budget status printout (FINB21S) run 1/6/93 for the period ending 8/31/92 supplied by Internal Audit.

2. Costs for Zenith were obtained from a budget printout as of 8/31/92. Costs under subobject .7F were totaled across organizations. Transactions for organizations 016 and 268, both codes for Evening School, were totaled: $122,790 + $9,200 = $131,990. No other Zenith costs appeared with this search strategy.

Pages 18-20

1. Except for the prekindergarten program, ratings for all Chapter 2 programs were taken from the Chapter 2 Formula 1991-92 final report.

2. For the prekindergarten program, the rating was based on previous years' test results, since the validity of the Bracken Basic Concepts Scale (BBCS) test results in 1991-92 was questionable.

3. For all Chapter 2 programs, "number of students served" was taken from Taken from the Chapter 2 Formula 1991-92 final report.

4. The cost of Chapter 2 programs was based on actual allocations taken from December 16, 1991 Chapter 2 Formula Budget Amendment #1.

5. For computer labs at Blackshear, Blanton, Read, and Johnston, investment costs were obtained from the administrative supervisor for Instructional Technology, and are estimates.

6. Because there were no achievement data for these Chapter 2 programs, ratings were based on the following indicators:

Academic Decathlon	Employee survey
Writing to Read computer lab at Blackshear	Employee survey
Extracurricular Transportation	Employee and student survey
Library Resources	Employee survey
Multicultural/Special Purpose Buses	Employee and bus user survey
Private Schools	Private School survey
Secondary Library Technology Support	Purchases
Spanish Academy	Participant survey
Support for Restructured Robbins	Principal interview
Technology for Access to Problem Solving	Employee survey
Technology Learning Center at Johnston	Employee survey

Page 29

1. Some of the Drug-Free Schools (DFS) programs included participants who may have been more at risk for alcohol and other drug (AOD) use than the average District student. Therefore, some of the estimates of students prevented from AOD use may be conservative.

2. Note that only DFS cost was used in cost-effectiveness calculations. Some programs received additional funding from other sources.

3. Percentages for recent AOD use by program participants and their differences from the District average were as follows:

DFS Program	Recent AOD Use by Program Participants	Percentage Points Better Than the District Average Rate of Use (40%)
Drug Abuse Resistance Education (DARE)	30%	10
Innovative Programs	36%	4
MegaSkills	23%	17
Peer Assistance and Leadership (PAL)	36%	4
Plays for Living	30%	10
Quality Schools	37%	3
Student Alcohol and Drug Abuse Education and Prevention Program (SADAEPP)	37%	3

Page 34

1. AISD's five strategic objectives, published in *Austin Independent School District Strategic Plan 1992-1997*, are:

- Every student will function at his/her optimal level of achievement and will progress successfully through the system.
- All students will function successfully at or above international standards.
- One hundred percent of all students who enter AISD will graduate.
- After exiting AISD, all individuals will be able to perform successfully at their next endeavor.
- AISD will upgrade the qualiaty of course content and the effectiveness of instruction.

REFERENCES

Douglas, S., & Thomas, T. (1991). A current compendium about compensatory education (Publication No. 90.23). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Fairchild, M., Christner, C., & Wilkinson, D. (1988, April). What price achievement: A cost-effectiveness study of Chapter 1 and schoolwide projects (Publication No. 87.22). Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Frazer, L. (1992). 1991-92 At-risk report: What does the future hold? (Publication No. 91.41). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Levin, H. M. (1983). Cost-effectiveness: A primer. Beverly Hills, CA: Sage Publications.

Ligon, G., & Baenen, N. (1989, April). Evaluation methodology for the 90's: A GENeric Evaluation SYStem (GENESYS) (Publication No. 89.16). Paper presented at the annual meeting of the American Educational Research Association, Boston.

Paredes, V. (1992). Report on school effectiveness (ROSE) (Publication Letter 91.U). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Wilkinson, D. (Ed.) (1986, September). 1985-86 Program costs comparison (Publication Letter 86.B). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Wilkinson, D. (1992). Notes on cost effectiveness (Publication Letter 92.D). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Wilkinson, D., & Ligon, G. (Eds.) (1992, March). IMPACT: How ORE findings have affected decisions in Austin and beyond! (Publication No. 91.20). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Wilkinson, D., & Spano, S. G. (1991, July). GENESYS 1990-91: Selected program evaluations (Publication No. 90.39). Austin, TX: Austin Independent School District, Office of Research and Evaluation.

Wilkinson, L. D. (1987, April). Small class sizes--The hidden costs of special programs. Paper presented at the annual meeting of the American Educational Research Association, Washington, D. C.

Wilkinson, L. D., & Gaines, M. L. (1987, April). Beyond the plain vanilla kid: How much do special programs *really* cost? (Publication No. 86.36). Paper presented at the annual meeting of the American Educational Research Association, Washington, D. C.